

L Number	Hits	Search Text	DB	Time stamp
-	231313	sony.as.	USPAT; US-PGPUB; EPO; JPO; DEFWENT; IBM_TDB	2002/09/14 13:04
-	3586	ccd and convex	USPAT; US-PGPUB; EPO; JPO; DEFWENT; IBM_TDB	2002/09/14 13:36
-	63	sony.as. and (ccd and convex)	USPAT; US-PGPUB; EPO; JPO; DEFWENT; IBM_TDB	2002/09/14 13:05
-	5	5343060.UFPN.	USPAT	2002/09/14 13:13
-	2	("4696021" ; "4914493").PN.	USPAT	2002/09/14 13:13
-	5	("5514888" ; "5585280" ; "5593913" ; "5595930" ; "5670384").PN.	USPAT	2002/09/14 13:13
-	9	("5321297" ; "5371397" ; "5633527" ; "5691548" ; "5711890" ; "5734190" ; "5796154" ; "6069350" ; "6104021").PN.	USPAT	2002/09/14 13:14
-	0	6255519.UFPN.	USPAT	2002/09/14 13:16
-	10	("4696021" ; "5371397" ; "5466926" ; "5593913" ; "5682215" ; "5689543" ; "5734190" ; "5796154" ; "6030852" ; "6104021").PN.	USPAT	2002/09/14 13:16
-	1	6255540.UFPN.	USPAT	2002/09/14 13:17
-	11	("4667092" ; "4694185" ; "5118924" ; "5132251" ; "5239412" ; "5248576" ; "5266501" ; "5306926" ; "5321297" ; "5323052" ; "5371397").PN.	USPAT	2002/09/14 13:17
-	8	5593913.UFPN.	USPAT	2002/09/14 13:18
-	3	("5170006" ; "5479049" ; "5583354").PN.	USPAT	2002/09/14 13:18
-	11	5796154.UFPN.	USPAT	2002/09/14 13:19
-	1	"5371397".PN.	USPAT	2002/09/14 13:20
-	8	5691548.UFPN.	USPAT	2002/09/14 13:20
-	1421	image and convex and substrate and dielectric	USPAT; US-PGPUB; EPO; JPO; DEFWENT; IBM_TDB	2002/09/14 13:28
-	2105	lens and softening and (heat adj treatment or heating)	USPAT; US-PGPUB; EPO; JPO; DEFWENT; IBM_TDB	2002/09/14 13:29
-	30	(image and convex and substrate and dielectric) and (lens and softening and (heat adj treatment or heating))	USPAT; US-PGPUB; EPO; JPO; DEFWENT; IBM_TDB	2002/09/14 13:29
-	44	ccd and convex and softening	USPAT; US-PGPUB; EPO; JPO; DEFWENT; IBM_TDB	2002/09/14 13:36
-	333	(257/275).CCLS.	USPAT; US-PGPUB; EPO; JPO; DEFWENT; IBM_TDB	2002/09/16 09:29
-	1	("6043824").PN.	USPAT; US-PGPUB; EPO; JPO; DEFWENT; IBM_TDB	2002/09/16 09:29

-	107	(438/24).CCLS.	USPAT; US-PGPUB; EPO; JPO; DEFWENT; IBM_TDB	2002/09/16 09:30
-	307	(438/29).CCLS.	USPAT; US-PGPUB; EPO; JPO; DEFWENT; IBM_TDB	2002/09/16 09:34
-	131	(438/60).CCLS.	USPAT; US-PGPUB; EPO; JPO; DEFWENT; IBM_TDB	2002/09/16 09:36
-	70	(438/70).CCLS.	USPAT; US-PGPUB; EPO; JPO; DEFWENT; IBM_TDB	2002/09/16 09:38
-	123	(438/75).CCLS.	USPAT; US-PGPUB; EPO; JPO; DEFWENT; IBM_TDB	2002/09/16 09:39
-	746	(359/619).CCLS.	USPAT; US-PGPUB; EPO; JPO; DEFWENT; IBM_TDB	2002/09/16 09:40

# PATENT ABSTRACTS OF JAPAN

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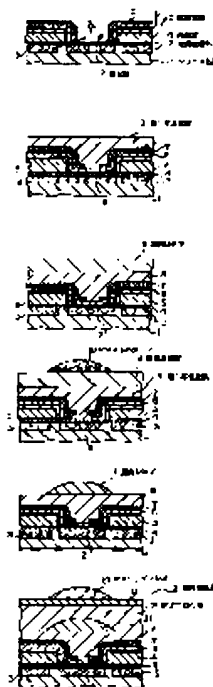
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## (54) MANUFACTURE OF SOLID-STATE IMAGE PICK-UP ELEMENT

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a method for manufacturing a solid-state image pick-up device where an interlayer lens is formed in a desired shape to improve condensing efficiency.

**SOLUTION:** A method is used to manufacture a solid-state image pick-up element 15 with a light reception part 2 that is formed at the surface-layer part of a substrate 1 for photoelectric conversion, a charge transfer part 3 for transferring a charge being read from the light reception part 2, and a transfer electrode 5 being provided via an insulation film 4 at a part nearly directly above the charge transfer part on the substrate 1. In this case, a first flattening film 8 is formed by covering the transfer electrode 5, and a transparent material is formed on the first flattening film 8 by the plasma CVD method. Further, a film 9 consisting of the transparent material is subjected to patterning, thus forming a transparent material into a lens 11 in layer in a convex lens shape that projects on a part directly above the light reception part 2. Then, the lens 11 in layer is covered, a second flattening film 12 is formed, and an on-chip lens 14 is formed directly above the light reception part 2 on the second flattening film 12.



## LEGAL STATUS

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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CLAIMS

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[Claim(s)]

[Claim 1] The manufacture method of the solid state image pickup device equipped with the light-receiving section which is characterized by providing the following and which is formed in the base surface section and makes photo electric translation, the charge transfer section which transmits the charge read from this light-receiving section, and the transfer electrode prepared in the abbreviation right above position of the aforementioned charge transfer section on the aforementioned base through the insulator layer. The process which covers the aforementioned transfer electrode and forms the 1st flattening film. The process which forms a transparent material by the plasma CVD method on the aforementioned 1st flattening film. The process which carries out patterning of the film which consists of the aforementioned transparent material, and uses this transparent material as the lens in a layer of the shape of a convex lens which becomes convex in right above [ of the aforementioned light-receiving section ]. The process which covers the aforementioned lens in a layer and forms the 2nd flattening film, and the process which forms an on-chip lens in right above [ of the aforementioned light-receiving section on the aforementioned 2nd flattening film ].

[Claim 2] The manufacture method of a solid state image pickup device according to claim 1 characterized by providing the following. The process at which the process which carries out patterning of the film which consists of the aforementioned transparent material, and forms the lens in a layer forms a resist layer on the aforementioned transparent-material film. The process which \*\*\*\*\*s the aforementioned transparent-material film on the conditions from which the selection ratio of this resist and the aforementioned transparent material is set to about 1 by using the process which carries out patterning of this resist layer to the convex lens configuration which becomes convex, and the pattern of the acquired convex lens configuration as a mask, and forms the lens in a layer.

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[Translation done.]